

High Voltage Load Resistor Array

The United States of America may have certain rights to this invention under Management and Operating Contract No. DE-AC05-84ER 40150 from the Department of Energy.

Field of the Invention

01) The present invention relates to high voltage resistors and more particularly to such a high voltage resistor that is capable of handling upwards of 600,000 volts DC at a current of 2 amps or more without arcing or surface breakdown.

Background of the Invention

02) In certain leading edge technological applications such as the operation of free electron lasers and the like, there exists the need to be able to safely handle very high voltages, on the order of above 500,000 volts, in, for example, power supplies and the like. In such applications, load resistors capable of handling such voltages are a necessary requirement. In such applications, the presence of electrical current on the order of 2 amps or higher is also quite possible.

02) Currently there are only a few commercially available options for resistors capable of handling such loads. Among these are solid carbon resistors and high resistance metal alloy load banks. While solid carbon resistors are capable of handling such loads, they are very expensive to construct, require long lead times to obtain, are not adjustable to ohmic values other than those for which they were